IN THE SPECIFICATION

Please substitute the following paragraphs for the originally filed paragraphs [005], [009], [0010], [0015], [0018], [0021], [0024], [0026], [0027] and [0029]. Also, please delete the Abstract and substitute it with the replacement Abstract as shown below.

[005] Each of the fiber optic cables—loose tube~~fiber~~, monotube, slotted core—may include other components, including reinforcing yarns and fibers, rip cords, and additional water-blocking materials (hot melts, water swellable powders, etc.). The fiber optic cables may also include helically wrapped tapes, corrugated armor and similar layers that help protect the optical fibers within the cable.

[009] The invention provides a communication cable for transmitting various communication signals. The cable comprises buffer tubes for optical fiber cables that are robust, crush resistant[[ce]], flexible[[,]] and cost effective. To obtain these properties, the buffer tubes contain a polymeric mixture of high impact polystyrene and styrene-butadiene-styrene. The polymeric mixture for the buffer tubes may also contain crystalline polystyrene and/or acrylonitrile-butadiene-styrene.

[0010] The invention includes a buffer tube for a communication cable comprising a polymer mixture with a flexural modulus ranging from about 150 to about 360 kpsi. The invention also includes a buffer tube for a communication cable comprising a polymer mixture comprising HIPS. The invention further includes a buffer tube for a communication cable comprising a polymer mixture containing HIPS and SBS. The invention still further includes communication cables containing[[s]] such buffer tubes.

[0015] Figure 3[[1]] shows a perspective side view of a slotted core ~~tube~~ optical cable in one aspect of the invention.

[0018] As noted above, the invention generally comprises buffer tubes for optical fiber cables that are robust, crush resistant[[ce]], flexible[[,]] and cost effective. In the aspect of the invention described below, these properties are obtained by using a polymeric mixture of high impact polystyrene and styrene-butadiene-styrene, optionally with crystalline polystyrene and/or acrylonitrile-butadiene-styrene. Any other mix of polymers achieving this same mixture of features could also be used in the invention.

[0021] Figure 3 illustrates a slotted core ~~tube~~ optical fiber cable (300) containing the buffer tubes of the invention. In cable (300), a slotted core (325) surrounds a central strength member (320). The slotted core (325) contains optical fibers (330) and the slotted core (325), in turn, is contained within a buffer tube (340). The buffer tube (340) may also contain a gel as known in the art. A radial strength yarn (360) is wrapped around the buffer tube (340), slotted core (325), and the central strength member (320). A ripcord (350) can be placed in a position such that the radial strength yarns (360) and other outer layers can be partially or fully removed to access the inner portion of the cable (300). Additionally, armor (not shown) can be placed around the central strength member (320), buffer tube (340), and the yarn~~m~~ (360)[[.]] to further protect the cable. Lastly, an outer jacket (380) is placed around the internal components of the cable (300).

[0024] The first polymer of the polymeric mixture in one aspect of the invention is a polymer with a flexular modulus within the range indicated above. Examples of such polymers include[[,]] crystalline polystyrene (CPS), acrylonitrile-butadiene-styrene

(ABS), high impact polystyrene (HIPS), and styrene-acrylonitrile (SAN), styrene-maleic anhydride (SMA), styrene-methylmethacrylate (SMMA), as well as combinations and mixtures thereof. In one aspect of the invention, HIPS is used as this first component of the polymeric blend. HIPS is a copolymer with a polystyrene backbone and chains of polybutadiene grafted onto the backbone. The polystyrene gives the material strength, but the rubbery polybutadiene chains give it resilience to make it less brittle. The flexular modulus for HIPS is about 240 kpsi.

[0026] The amounts of the HIPS and SBS in the polymer mixture depend on the desired characteristics of the buffer tubes, as well as cost considerations. In one aspect of the invention, about 5 to about 25 vol% SBS is mixed with about 75 to about 95 vol% HIPS. In another aspect of the invention, about 5 to about 20 vol% SBS is mixed with about 80 to about 95 vol% HIPS. Mixing the polymers in these amounts produces [[a]] buffer tubes with adequate cold temperature performance, yet with a flexular modulus in the desired range as detailed above. In addition, mixing the polymers in these amounts minimizes costs: buffer tubes made using these amounts cost about half as much as PBT buffer tubes.

[0027] In another aspect of the invention, additional polymers could be added to the polymer mixture used for the buffer tubes. Preferably, these additional polymers, when mixed with the polymers mentioned abovеut, maintain the flexular modulus within the rangesd detailed above. Examples of these additional polymers include ABS and CPS as described above, as well as mixtures thereof and combinations thereof. The amounts of these polymers will be determined by the desired characteristics of the buffer tubes, as well as cost considerations.

[0029] In addition to exhibiting chemical and heat resistance similar to conventional buffer tube materials, the polymeric mixture of the invention provides [[a]] crush resistance and flexibility that are comparable, respectively, to PBT and polyolefins (e.g., polyethylene, polypropylene, and their copolymers). The polymer mixture of the invention achieves a good balance between crush resistance and flexibility by exhibiting a flexural modulus between that of PBT and polyolefinic materials. For example, the polymer mixture of the invention has a flexural modulus (at room temperature) of about 180 to about 280 kpsi. Under the same conditions, PBT exhibits a flexural modulus of about 377 kpsi and a nucleated copolymer PP (a desirable polyolefin) has a flexural modulus of about 180 kpsi.

ABSTRACT

A communication cable for transmitting various communication signals. The cable comprises buffer tubes for optical fiber cables that are robust, crush resistant[[ce]], flexible, and cost effective. To obtain these properties, the buffer tubes contain a polymeric mixture of high impact polystyrene and styrene-butadiene-styrene. The polymeric mixture for the buffer tubes may also contain crystalline polystyrene and/or acrylonitrile-butadiene-styrene.